

NOV 4 1992

Mr. Steven Kaminski, Chief
Facility Compliance Section - Region 3
Bureau of Eastern Regions
Hazardous Waste
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233

Re: Grumman Aerospace Corporation
EPA I.D. No.: NYD003995198

Dear Mr. Kaminski:

We have reviewed the RCRA Facility Assessment (RFA) report for the Grumman Aerospace Corporation facility, located in Calverton, New York. The report is satisfactory aside from several typographical errors and incomplete sentences on pages 2 and 3.

In order to maintain consistency between the table displayed on page 2 and the "Recommendations and Conclusions" section on p.4, we recommend that a footnote be attached to the table to indicate that the Sampling Visit for the Northeast Pond Disposal Area concluded that an RFI would be required for that area. This would clarify why the table shows that only one SWMU and two AOCs require an RFI, whereas the text notes that two SWMUs and two AOCs require an RFI.

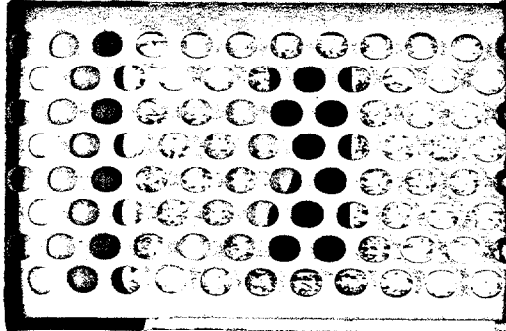
If you should have any questions, Ms. Carol Stein, of my staff, can be contacted at (212) 264-5130.

Sincerely yours,

James Reidy, P.E.
Chief, New York Corrective Action Section

bcc: C. Stein, 2AWM-HWFV

19.01.00.0017



ROUTING AND TRANSMITTAL SLIP

Date 8/17/94

03

TO: (Name, office symbol, room number,
building, Agency/Post)

Initials

Date

1. Jim Colter, Naval Facilities
Engineering Command

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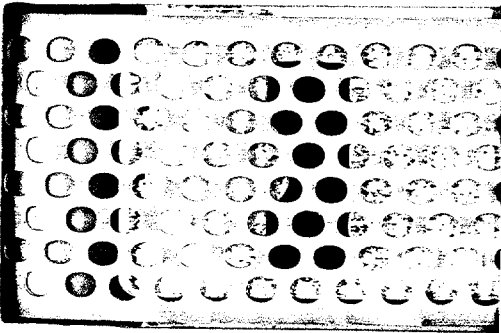
Action	File	Note and Return
Approval	For Clearance	Per Conversation
✓ As Requested	For Correction	Prepare Reply
Circulate	✓ For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

REMARKS

Attached is a copy of the RFA prepared by
NKDEC for the original SWMUs found at
the Grumman-Calverton facility.

Also attached, FYI, is the EPA approval
letter for the RFA.

If you should have any questions, please let
me know.



DO NOT use this form as a RECORD of approvals, concurrences, disposals,
clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)

Room No.—Bldg.

Carol Stein, EPA Region II

Phone No.
(212) 264-5130

5041-102

★ U.S. GPO: 1986-181-246/40016

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

RCRA FACILITY ASSESSMENT

FINAL REPORT

GRUMMAN AEROSPACE CORP.
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
CALVERTON, NEW YORK

EPA I.D. No. NYD003995198

SEPTEMBER 30, 1992

I. INTRODUCTION

The Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) authorize EPA or its designee to require corrective action for the release of hazardous waste or hazardous constituents from solid waste management units (SWMUs) and other areas of concern (AOCs) at all operating, closed or closing RCRA facilities. The intent of this authority is address previously unregulated releases to air, surface waters, soils, groundwater, and from the generation of subsurface gas. The first phase of the corrective action program, as established by EPA, is development of a RCRA Facility Assessment (RFA). The RFA includes a Preliminary Review (PR) of all available relevant documents, A Visual Site Inspection, a VSI Summary and a Sampling Visit Work Plan (SVWP), and, if appropriate, a Sampling Visit (SV), followed by a Final RFA Report which includes a compilation of all previously collected data and written reports.

II. PRELIMINARY REVIEW

The Preliminary Review (PR) is conducted to gather and evaluate existing information on the facility in order to identify and characterize potential releases and to focus the activities to be conducted during the visual site and sampling visit.

The PR for Grumman Aerospace Corp., in Calverton, New York (Figures 1 and 2) was completed by the Department on August 7, 1990 and revised on September 4, 1991. A copy of this Revised PR is attached to this report (Appendix 1). The PR describes the unit conditions, release description, target population or environment and recommendation for further action for each SWMU/AOC. 14 solid waste management units (SWMUs) and 4 areas of concern (AOCs) were identified in the PR and additional Work was recommended for 3 swmus and 3 aocs. An RFA Sampling Visit for Northeast Pond Disposal Area, Picnic Grounds Disposal Area and the McKay Lake. *was found to be required*

The SWMU/AOC summary is provided in the table 1.

Label Table 1

UNIT	TYPE	NO ACTION	SV	RFI
Northeast Pond Diposal Area	SWMU		X	
Fire Rescue Training Area	SWMU			X
Picnic Grounds Disposal Area	SWMU		X	
Old Fuel Calibration Area	AOC			X

RFI

UNIT	TYPE	NO ACTION	SV	RFI
Engine Run up Area/South End of Runway 32-14	AOC			X
Old Drum Storage Area	SWMU	X		
Incinerator	SWMU	X		
Waste Oil Storage Tank	SWMU	X		
Industrial Waste Water treatment facility	SWMU	X		
Paint Waste Water Transfer Station	SWMU	X		
New Drum Storage Area	SWMU	X		
Fuel Test Laboratory	SWMU	X		
Injection Wells	SWMU	X		
Ammunition Demolition Area	SWMU	X		
Gun Range Ammunition Diposal Area	SWMU	X		
Mckay Lake	AOC		X	

II. VISUAL SITE INSPECTION

The Visual Site Inspection (VSI) is conducted to inspect the facility for evidence of releases and to identify additional SWMUs/AOCs. A VSI was conducted at Grumman Aerospace Corp. on August 20th and 21st, 1990. The VSI Report was completed on October 1990 and revised on September 4 1991. A copy of this revision is attached (Appendix 1). The report list of each SWMU/AOC and describe their conditions during the the VSI, a total of 14 swmus and 4 aocs were inspected. An RFA - Sampling Visit (SV) was recommended for the Picnic Grounds Disposal Area, Northeast Pond Disposal Area and the McKay Lake. A copy of the RFA - SV Workplan Outline is attached (Appendix 2).

III. SAMPLING VISIT

A Sampling Visit (SV) was implemented to determine whether or not suspected releases have occurred. The SV was carried out at the northeast pond disposal area and the picnic grounds disposal area. No work was performed at McKay lake at this time.

area.

but it is anticipated to be carried out in the near future.

Sampling Activities at the northeast pond disposal area consisted of collecting 12 soil samples at 4 soil boring locations; 2 sediments samples; and 2 surface water samples. See Appendix 3 Figure 3-2 for the location of each of the sample points at the northeast pond disposal area. Each of the samples was analyzed for volatile organics, semivolatile organics, metals, and cyanide. Additionally, the surface water samples were analyzed for polychlorinated biphenyls (PCBs) and pesticides.

The results of RFA sampling and analysis performed at the northeast pond disposal area indicate significant contamination of inorganics in the soil, contamination of the groundwater is a possibility.

Sampling at the picnic grounds disposal area consisted of collecting nine soil samples at three soil boring locations. See Appendix 3 Figure 3-3 for the location of the sample points at the picnic grounds disposal area. Each of the samples was analyzed for volatile organics, semivolatile organics, metals, cyanide, PCBs, and pesticides.

The results of chemical analysis of the soil samples collected at the picnic grounds disposal area did not reveal evidence of significant contamination by organic or inorganic compounds. The concentrations detected were very low, near background for inorganics or near the detection limit for organics, indicating that significant quantities of hazardous materials are probably not present.

IV. RECOMMENDATION AND CONCLUSION

fourteen (14) types of SWMUs and four (4) AOCs have been identified at the Grumman Aerospace Corp. in Calverton. Table 1 lists these SWMUs and AOCs and the recommendation for the next phase of activity for each one. No further action is recommended for eleven (11) of the SWMUs. A Sampling Visit (VS) was performed at (2) of the SWMUs. At one of the SWMUs, the Picnic Grounds Disposal Area, the results of the RFA sampling and analysis indicate no further action is necessary in this area. At the Northeast Pond Disposal Area, the analytical results obtained during the RFA sampling survey indicate significant contamination of soil, therefore an RFI shall be implemented. The Sampling Visit (SV) for the McKay Lake will be carried out as a part of the RFI. A RCRA Facility Investigation (RFI) is recommended for two (2) SWMUs and two (2) AOCs. The RFI will involve soil, surface water, and sediment samplings, and groundwater monitoring to fully determine the rate and extent of contamination in the soil and groundwater as well as to identify the source of contamination.

Figure 1

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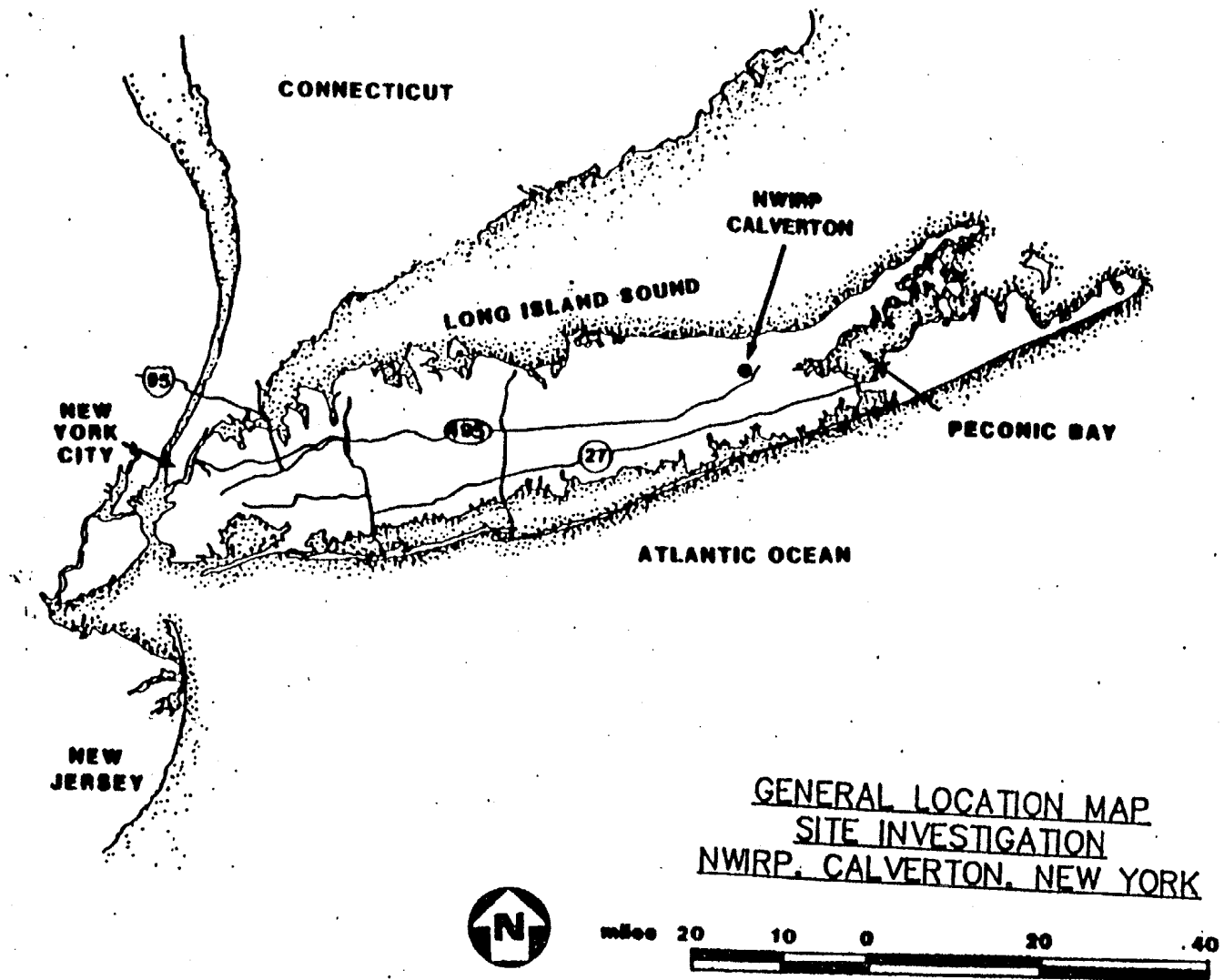
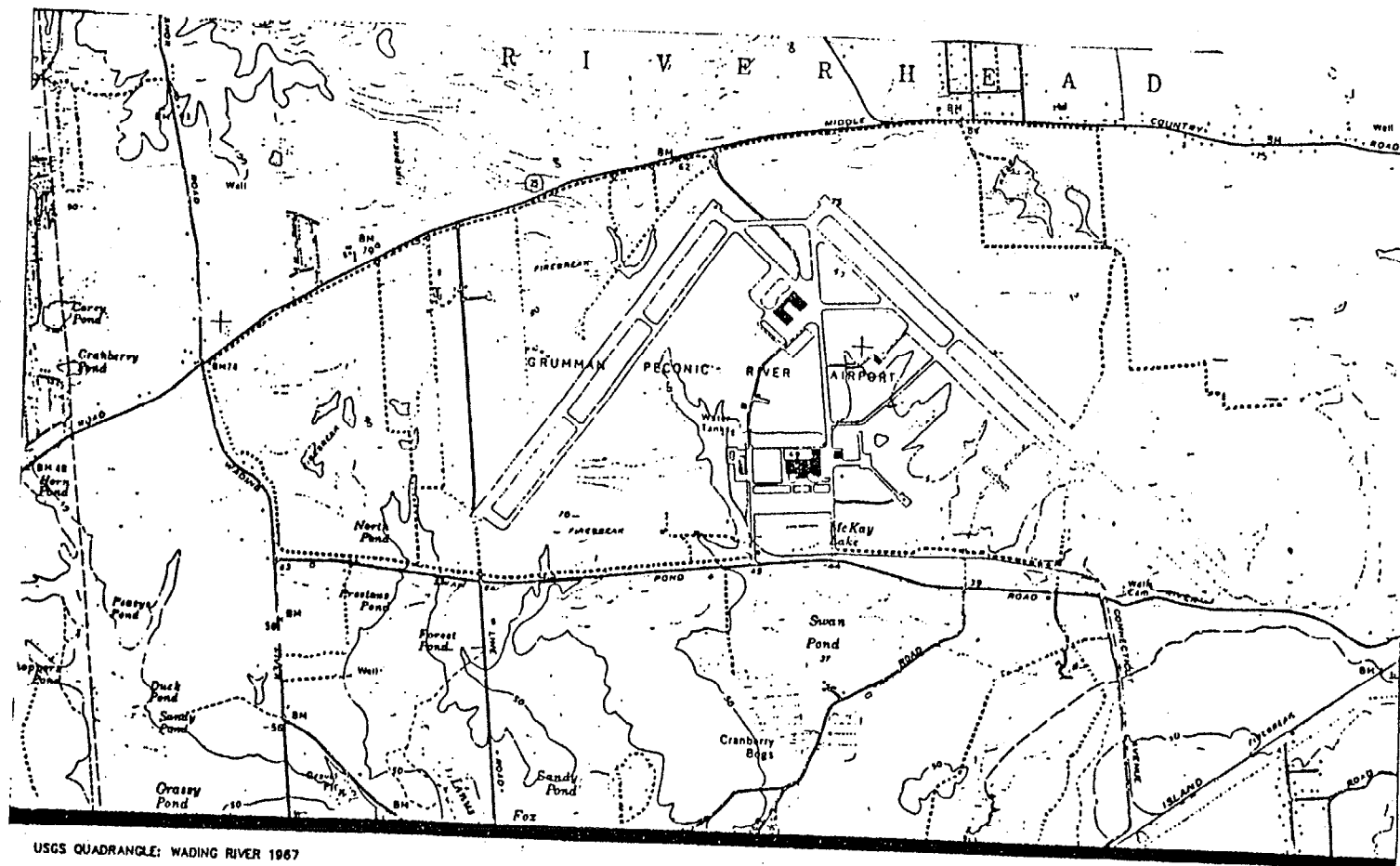


Figure 2



USGS QUADRANGLE: WADING RIVER 1967

0 2500 5000
SCALE IN FEET

SITE LOCATION
SITE INVESTIGATION
NWRP, CALVERTON, NEW YORK



APPENDIX 1
TO
THE RTA REPORT

RCRA FACILITY ASSESSMENT REPORT

PRELIMINARY REVIEW

(REVISED JUNE 19, 1991)

GRUMMAN AEROSPACE CORPORATION
GRUMMAN BOULEVARD
CALVERTON, SUFFOLK COUNTY
NY 11933

EPA ID # NYD 003995198

RECOMMENDATIONS

Subsequent to the review of the available documents (Part 373 permit application, initial assessment study conducted at U.S. Naval Weapons Industrial Reserve Plant(NWIRP), Calverton, SWMU questionnaire, SPDES permit etc.) and the Visual Site Inspection (VSI) conducted at the site on August 20th and 21st, 1990 , the preliminary review for the site dated August 7, 1990 was revised on September 4, 1991.

Initially 14 solid waste management units (SWMU's) and areas of concern (AOC) at the NWIRP, Calverton Facility, were identified. One area of concern, the McKay lake, however, was added to the list for further investigation. The McKay lake receives discharges from industrial waste water and the sewage treatment plants, which in turn flows over an out fall weir into the Peconic river. The allowable concentrations of contaminants discharged into the lake from the industrial waste water treatment plant, as regulated by SPDES permit, are far above the allowable ground water limits. The fact that the lake provides recharge to the upper aquifer and is possibly in direct hydraulic contact with the ground water, makes it imperative to investigate any migration of contaminants into the ground water. The VSI revealed three other areas requiring further investigation for potential releases. These included the North East pond disposal area, Fire rescue training area and old calibration area (SWMU # 4A on the site plan in original revised PR). The PR dated September 4, is being revised again to include the picnic ground disposal area in the list for sampling visit. The list of SWMU's and recommendations are as follow:

The SWMU summary is provided in the table 1.

TABLE 1.

UNIT	LOCATION	VSI	SV	RFI	NO ACTION
North east pond disposal area	1		x		
Fire rescue Training area	2			x	
Picnic Ground disposal area	3		x		
Old fuel calibration/engine run up area	4			x	
Old drum storage area	5	FINAL CLOSURE IN EFFECT			x

TABLE 1 contd.....

UNIT	LOCATION [^]	VSI	SV	RFI	NO ACTION
Incinerator	6				x
Waste oil storage tank	7				x
Industrial waste water treatment facility	8				x
(a) Treatment tank		(4 no.'s)	6000 gal. capacity each		
(b) Decanted water tank		(1 no.)	6000 gal. capacity		
(c) Sludge thickening tank		(1 no.)	3400 gal. capacity		
(d) Decanted liquid sump		(1 no.)	7000 gal. capacity		
(e) Diatomaceous E.P. Filters		(2 nos.)			
(f) Waste holding tank		(1 no.)	5175 gal. capacity		
Paint waste water transfer station	9				x
New drum storage area	10				x
Fuel test laboratory	11				x
Injection wells	12				x
Ammunition demolition area	13*				x
Gun range ammunition disposal area	14*				x
McKay Lake	15		x		

* Not shown on the plan in original PR , ^ Indicated on the site plan in original PR

OVERVIEW

The Grumman aerospace corporation site at Calverton is predominantly owned by the navy and operated by Grumman. At this site the final assembly, functional ground testing and flight testing, of all the aircraft manufactured or modified at Grumman's long island facility is performed. The facility has been in operation since 1955.

At NWIRP Calverton, hazardous and industrial chemicals are generated primarily as a result of aircraft production and refurbishing activities. Hazardous wastes (F001/F002, F005/F003, D007, D001), as defined under NYSDEC 6 NYCRR Part 371 regulations, are generated at various production areas on the site, placed in containers, and finally are stored at the drum storage facility temporarily until final disposal off site. Additionally, waste water from paint and paint stripping operations, contaminated with high concentrations of Chromium and Phenols, is treated at the industrial waste water treatment facility on the site before final discharge into the surface water, under SPDES permit # 0025453.

Long Island is overlain with pleistocene deposits, which form the upper glacial aquifer which lies about 8' to 16' below the facility, down to 40' to

130' depth. Other geological units underlying NWIRP Calverton are the Magothy aquifer, clay, and Lloyed aquifer. Ground water in the portion of upper glacial aquifer that underlies the activity, flows primarily south, whereas the flow in northmost undeveloped area is mainly in North direction. Ground water flow across the facility is very rapid (K= 200 feet per day). The velocity of flow however would be higher, as compared to "K", because of high head differential.

UNIT DESCRIPTION

SITE # 1. North east pond disposal area

a. UNIT CONDITION

This unit is located in the northeastern portion of NWIRP Calverton. Though it is within the perimeter fence of the activity, it lies at a remote location with respect to the industrial areas of the facility. An estimated 7500 cubic yards of the debris and fill is present in the disposal area, including the slopes along the northeastern entrance road to the site. According to records, the waste material disposed includes metal and wood fabrications, office materials and furniture, concrete, bricks, piles of asphalt macadam, tires, paint pails on slopes along the northeastern entrance road and a wrecked aircraft cockpit. Also the paint pails with residue paint in them and two empty 55 gallon drums of unidentified origin were located in the pond in the past. During the VSI some debris consisting of aircraft parts, tires, 55 gallon drum's remains, laboratory test tubes, wood, concrete and other construction material was found scattered mainly along the slopes and most of the material seemed buried under the top soil. There was no sign, however, of distressed vegetation.

b. RELEASE DESCRIPTION

Hazardous waste or hazardous waste constituents are not known. However based on facility's past activities and discovery of paint pails with residues and 55 gallon drums in and around the pond in the past and during the VSI, there is a possibility of these drums and pails having contained petroleum based products and products with high heavy metal content, when disposed. This might have resulted in leaching of hazardous constituents into the ground water, which discharges into the Swan pond and finally into the Peconic river.

c. POTENTIAL CONTAMINANT RECEPTORS

Groundwater migration is primarily downward into the upper glacial aquifer, which discharges into the Swan Pond and ultimately into the Peconic river and Great Peconic bay. The potential receptors of the contaminants originating at NWIRP Calverton site, include aquatic organisms that live and breed in the swampy area's of the pond and the human population in the area, which depends, largely on upper glacial and Magothy aquifer for their drinking water supply.

d. RECOMMENDATIONS

A sampling visit is recommended to take soil samples around the site. Also ground water samples should be taken after installing cluster wells.

SITE # 2 FIRE RESCUE TRAINING AREA

a. UNIT CONDITION

The fire rescue training area is located approximately 2000 feet from the main gate, and has been used since 1955 for fire rescue training exercises. Until 1975 the wastes used for training purposes included waste jet fuel, oil and solvents including toluene, methyl ethyl ketone and lacquer thinner. Materials used for fire fighting also included compounds like Halon 1301 and dry chemical extinguisher. Since 1975 however only clean fuel from defueling of aircraft is being used. Now the training is being conducted by

burning oil in a controlled fashion in a concrete pit with secondary containment, instead of an earthen pit. During the VSI the signs of potential release were evident as heavily stained soil all around the training area was observed. A number of monitoring wells and a recovery well were seen installed around the site. No unusual affects on the vegetation could be seen during the VSI.

b. RELEASE DESCRIPTION

Two unscheduled releases, one of unknown amount of fuel oil from partially filled 6000 gallon supply tank in 1982 and the other of approximately 300 gallon (30 gallons according to IAS) of #2 fuel oil in 1983, have been reported apart from very likely routine releases of hazardous constituents from fuel oils and chemicals being used for exercises. The soil in the vicinity was stained from oil.

c. POTENTIAL CONTAMINANT RECEPTORS

Human population in the area, which depends largely on the ground water for their water supply, is a potential receptor apart from the aquatic life and certain endangered species in the swamp area.

d. RECOMMENDATIONS

RFI recommended. Soil, subsoil samples in the area and ground water samples from upper glacial aquifer at different depths, are recommended. Since recovery well is already installed to prevent the migration of contamination, another one is not recommended at this time.

SITE# 3 PICNIC GROUND DISPOSAL AREA

a. UNIT DESCRIPTION

According to the available record, material disposed on the site includes framing lumber, snow fencing, steel stairways, construction materials, plywood, plastic nosecone steel fabrications and wall panel section etc. Also, the records indicated the site to be a 60 feet long and 40 feet wide trench with estimated burial depth of 8'. However, during the VSI none of this information could be corroborated, as the site had already been cleaned up. No signs of distressed vegetation were discovered.

b. RELEASE DESCRIPTION

Nothing could be found on the site indicating any release of hazardous waste or hazardous constituents.

c. POTENTIAL CONTAMINANT RECEPTORS

In the absence of any probability of a release, no potential contaminant receptor could be identified.

d. RECOMMENDATIONS

Initially this unit was marked for no action. However on insistence of the USEPA a sampling visit is recommended for this area. 9 Sub-surface soil samples @ 2' to a depth of 6' are recommended for the final sampling outline.

SITE #4 OLD FUEL CALIBRATION/ENGINE RUN-UP AREAS

a. UNIT DESCRIPTION

Two waste fuel collection tanks are located at the site. Both the tanks are above ground and have capacity of 500 gallons and 5000 gallons respectively. Material stored or disposed of in these area's is JP-4 aircraft fuel. The location of tanks and the areas of contamination are as shown on the figure 4 attached. There have been three spills reported recently. The first being 200 gallons of JP-4 fuel spilled in 1982, in engine test area, the second was again in 1982, when 30 gallon spill of JP 5 washed onto the ground at the engine run up area, and the last one was a spill of an unknown amount

of oil water mixture in the fuel calibration area. The VSI didn't indicate any stressed vegetation or any other peculiar feature of a recent spill in the area. At least 15 monitoring wells and a recovery well were located around the site. The frequency of monitoring ground water, however, could not be ascertained at the time of the VSI.

b. RELEASE DESCRIPTION

There has been a release of hazardous waste and hazardous waste constituents to the ground water. Free product has been found in number of monitoring wells.

c. POTENTIAL CONTAMINANT RECEPTORS

Endangered aquatic and wildlife species downstream of Swan pond, and human population in the area, who depend largely on the upper glacial aquifer for drinking water supply, are the most likely receptors.

d. RECOMMENDATIONS

RFI recommended. Cluster wells should be installed for the ground water samples, taken at different depths, to be tested for volatile organic compounds, heavy metals and other petroleum related compounds. Also soil samples should be taken in the area and tested for the same parameters. Since recovery well is already operational on the site, another one is not recommended at this time.

SITE # 5 OLD DRUM STORAGE AREA

a. UNIT CONDITION

The facility was in operation until 1988, and was being used for waste like methyl ethyle ketone, paints, phenolics and 1,1,1 trichloromethane. Most of the material stored is as defined hazardous under Part 371. The site is now paved and is being used for storage of empty jet fuel tanks. No sign of any release could be seen during VSI.

b. RELEASE DESCRIPTION

No release of hazardous waste or hazardous waste constituent has been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No potential receptors in the absence of releases are expected.

d. RECOMMENDATIONS

The unit has been closed officially under RCRA. No action is recommended.

SITE #6 INCINERATOR

a. UNIT CONDITION

Unit is used to incinerate classified papers, apart from occasional use of the incinerator to burn small amounts of contraband for the local police. The incinerator ash is not hazardous. No sign of any release of contaminants could be observed.

b. RELEASE DESCRIPTION

No releases of hazardous waste or hazardous constituents has been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No potential receptors identified in absence of potential releases.

d. RECOMMENDATIONS

No action is recommended.

SITE #7 WASTE OIL STORAGE TANK

a. UNIT CONDITION

The storage tank stores waste oil from various aircraft operations mainly from fuel calibration and aircraft defueling operations. It is an above ground tank with 6000 gallon capacity. Secondary containment in the form of a dike is provided for the tank. The VSI didn't reveal any signs of release.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous waste constituents release has been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No receptors could be identified in the absence of potential release.

d. RECOMMENDATIONS

No action is recommended.

SITE #8 INDUSTRIAL WASTE WATER TREATMENT PLANT

a. UNIT CONDITION

Waste treated at the plant is waste water from the paint and paint stripping operations, and the waste water is contaminated with chromium and phenolic materials. The resultant discharge into the surface water meets the discharge levels as provided by SPDES permit and the resultant sludge is transported to the Grumman, Bethpage facility for vacuum filtration. No problem area's could be discovered during the VSI.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous waste constituent releases have been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No receptors of the contaminants could be identified in the absence of potential release.

d. RECOMMENDATIONS

No action is recommended.

SITE #9 PAINT WASTE WATER TRANSFER STATION

a. UNIT CONDITION

Waste water passing through this facility is from paint and paint stripping operations and is a hazardous waste according to Part 371. The facility includes an underground sump connected to an indoor sump. Two emergency holding tanks are available at the unit. The unit has been in operation since 1979.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous constituents release has been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No receptors of the contaminants can be identified in the absence of potential release.

d. RECOMMENDATIONS

No action is recommended.

SITE #10 NEW DRUM STORAGE AREA

a. UNIT CONDITION

Wastes stored at this location are 55-gallon drum quantities of waste solvents, paints, and liquid paint materials. The facility has a capacity to store 250 55-gallon drums on a 50'x80' concrete pad. The facility is provided with a secondary containment, large enough to contain spillage of more than 100% capacity of the unit.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous constituent release has been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No receptors can be identified in the absence of a potential release.

d. RECOMMENDATIONS

No action recommended.

SITE #11 FUEL TEST LABORATORY

a. UNIT CONDITION

Waste fuel oil, predominantly JP-5 aircraft jet fuel, is the waste material stored at this site. There are three waste fuel storage tanks at the site. Two fiberglass waste oil tanks 550 and 2000 gallon capacity, respectively and a third with a capacity of 550-gallons made of stainless steel, is being used for JP-5 fuel storage. The work operation on the site involves calibration of fuel for planes.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous constituents release is reported.

c. POTENTIAL CONTAMINANT RECEPTORS

No receptors could be identified in the absence of potential release.

d. RECOMMENDATION

No action is recommended.

SITE # 12 INJECTION WELLS

a. UNIT CONDITION

There are 46 type 5D2 dry wells along the runway edge and paved areas and 27 active type 5W10 cesspools serving more than 25 people at plant 8 facility. The drainage (5D2) pits along the runway were about 30' deep and about 3'x 3' in cross section. Surface run-off from the runways is carried to these drainage pits via 2' diameter pipes and is finally carried over by big outfall sewers to swales for final drainage. No evidence of any release could be seen on or around the site of these drainage pits or cesspools.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous constituents release has been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No receptors can be identified in the absence of any potential release of hazardous constituents.

d. RECOMMENDATION

No action recommended.

SITE #13 AMMUNITION DEMOLITION AREA

a. UNIT CONDITION

The area is located to the northwest of the activity's runways and industrial areas. It was a site for controlled demolition of excess or off specification ammunition from 1957 to 1985. Personnel destroyed the ammunition by setting fire to 5 to 10 gallons of various types of waste fuel in a 55 gallon drum in an unlined pit. The ammunition was released in a controlled fashion into the fire and burned. About 1700 rounds of ammunition is believed to be destroyed every year. The waste ammunition is still being disposed in the area, but now a concrete pit with double cover on the top, right next to the old site, is being used. No sign of any release or distressed vegetation could be discovered on the site.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous constituent release has been reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No potential receptors can be identified in the absence of any suspected release.

d. RECOMMENDATIONS

No action is recommended.

SITE # 14 GUN RANGE AMMUNITION DISPOSAL AREA

a. UNIT CONDITION

The area was used for the testing of aircraft cannons and is located between the radio noise check area and the engine run up area. During the testing operations, the ammunition which failed to fire, was suspected to have been dumped in an intermittent stream and swamp area. No evidence of any improper ammunition disposal could be discovered during the VSI.

b. RELEASE DESCRIPTION

No hazardous waste or hazardous constituents release is reported or suspected.

c. POTENTIAL CONTAMINANT RECEPTORS

No receptors could be identified in the absence of potential release.

d. RECOMMENDATIONS

No action is recommended.

SITE # 15 MCKAY LAKE

a. UNIT CONDITION

McKay lake is an artificial lake receiving treated industrial waste water and effluent from the sewage treatment plant from the facility. There is an overflow weir on the southern end of the lake, over which the water from the lake flows into Swan pond and ultimately into Peconic river. This facility has obtained SPDES permit for this discharge into the lake, which contains SPDES permitted levels of chromium, cadmium, Lead, Silver, Fluoride and Phenols. McKay lake recharges the upper aquifer, and is in direct hydraulic contact with the ground water.

b. RELEASE DESCRIPTION

Since the lake is practically a stagnant water body, receiving treated industrial waste water and sanitary sewage as its source of supply with head (if any) above the overflow weir providing the outflow from the lake, it is

suspected that most of the SPDES discharge contaminants might have been getting entrapped in the lake. Heavy metals and other contaminants are suspected to be migrating to the ground water.

c. POTENTIAL CONTAMINANT RECEPTORS

Human population in the area consuming the ground water and certain endangered aquatic & animal species are the potential receptors. Also since the lake is being used as a breeding and spawning pond for certain kind of fish, which are distributed to different ponds all around the region for propagation, the potential receptors could be wide spread human population in the region.

d. RECOMMENDATIONS

A Sampling visit for surface water and sediments is recommended.

REFERENCES:

1. New York State Part 373 permit application (Revised) submitted by Grumman aerospace, Calverton, dated June 07, 1990.
2. SPDES permit # 0025453 issued to the facility at Calverton.
3. Remedial Investigation/Feasibility study work plan, Grumman Aerospace, Calverton, Dec. 1986.
4. SWMU questionnaire submitted by Grumman, Calverton, dated Dec. 09, 1987.
5. Preliminary Review of the facility, dated August 07, 1990.

APPENDIX 1

Photographs taken during the VSI, displayed with labels, are as follows:



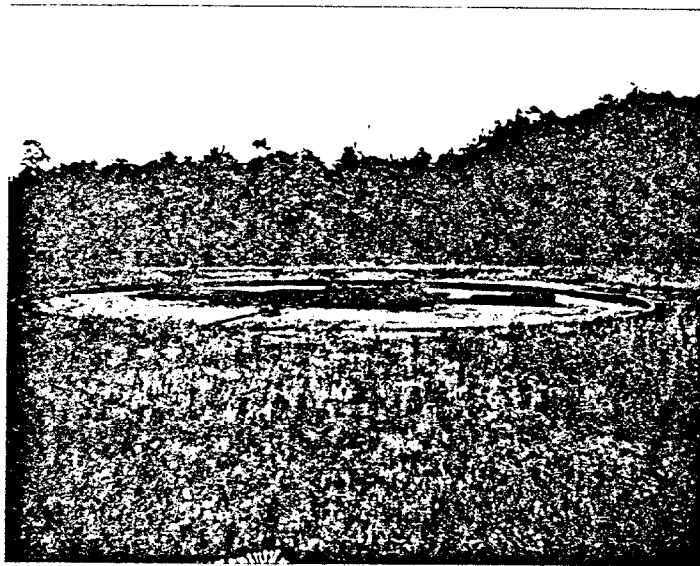
1. North east pond disposal area.



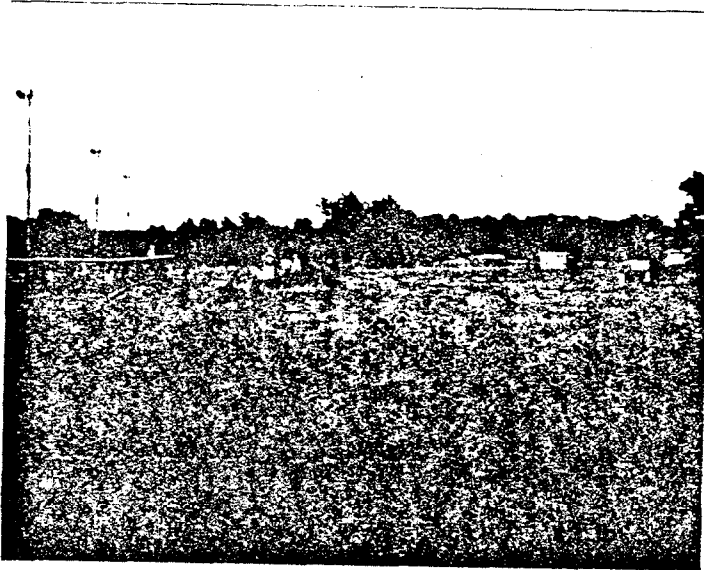
2. N-E pond disposal area along the slopes of the pond.



3. N-E pond area showing partially buried 55-gallon drum.



4. Fire Rescue training area with new concrete pad.

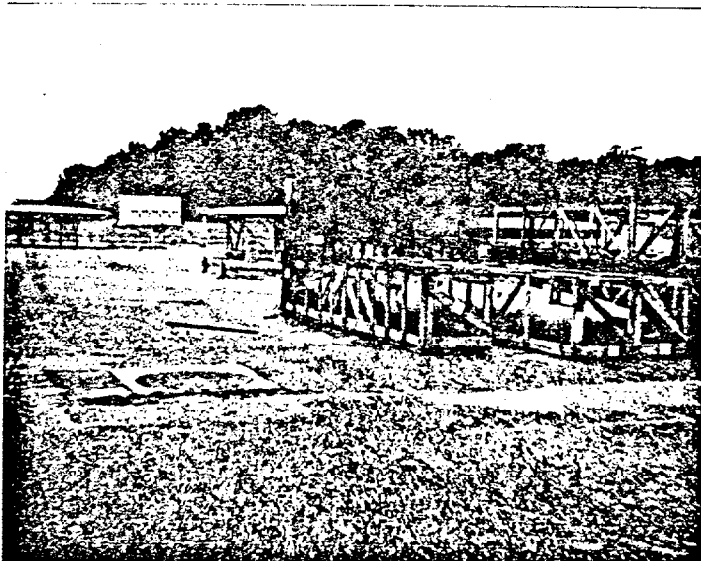


5. Old fuel Calibration/ Engine runup areas (4A)

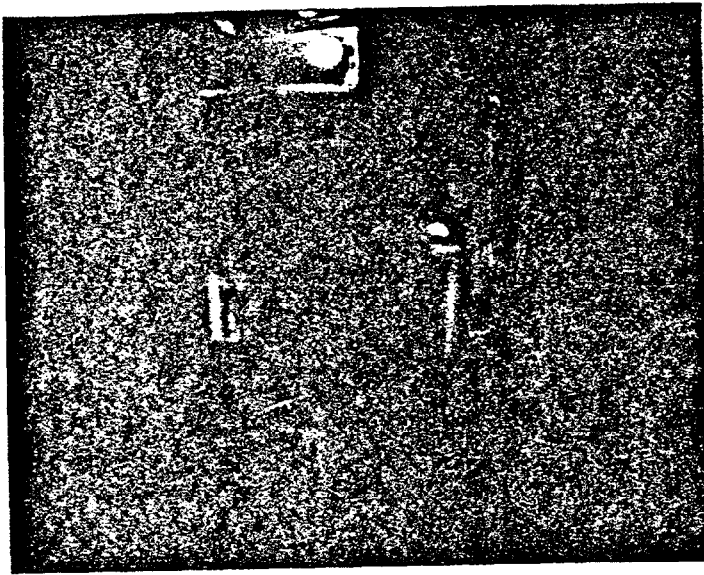
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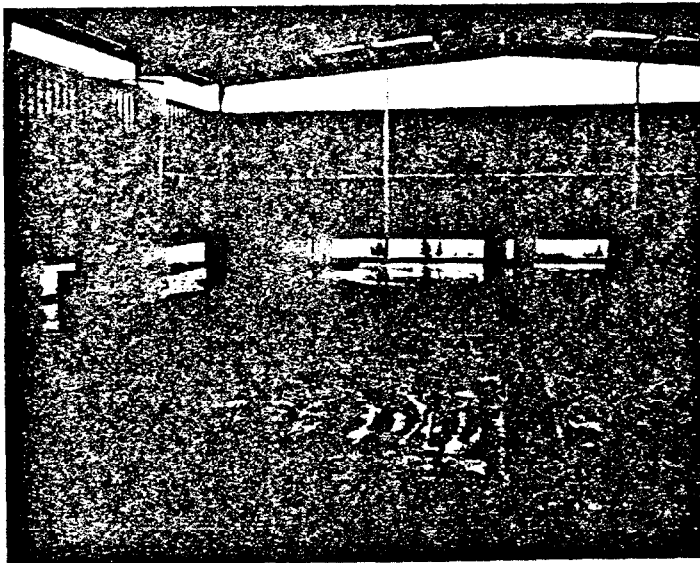
6. Old Fuel Calibration/ Engine run up area (4B)



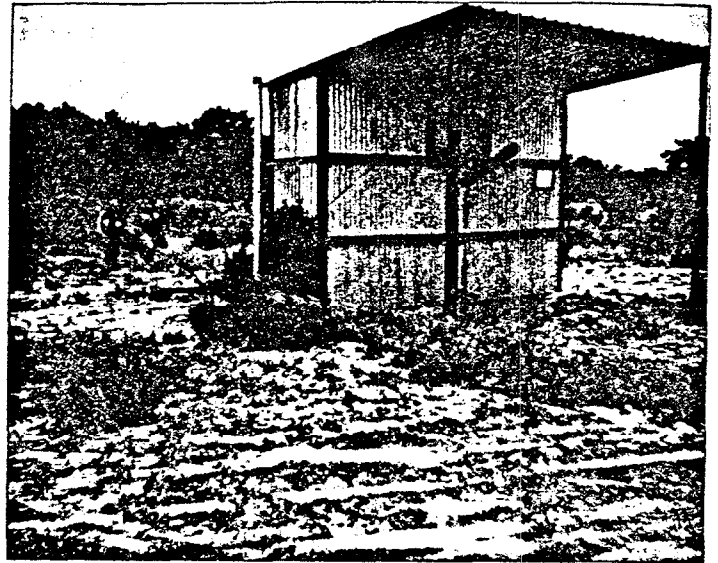
7. Old Drum Storage Area.



8. Industrial Waste Water Facility.



9. New Drum Storage Area.



10. Ammunition demolition area.



11. McKay lake

APPENDIX 2

TO

THE RFA REPORT

RCRA FACILITY ASSESSMENT

SAMPLING VISIT PLAN

GRUMMAN AEROSPACE
CALVERTON, SUFFOLK COUNTY
NEW YORK
EPA ID NYD003995198

PREPARED BY THE NYSDEC

Sampling for volatile and semivolatile organics, pesticides, PCB's along with selective RCRA metals shall be conducted at the northeast pond disposal area, Picnic Ground disposal area and McKay Lake. The sampling plan summary table attached outlines the number and type of samples, collection procedures, parameters and analytical methods employed.

The initial pathway of potential release migration is through the soil to the groundwater. Sampling of the soil and subsoil in the pond disposal area is recommended in an effort to detect any contamination due to the presence of waste in the area. Also the groundwater in the vicinity, upstream and downstream of the site, will be sampled and tested by installing cluster wells.

McKay Lake receives treated industrial wastewater and sanitary sewage apart from non contact cooling water, as its source of supply. The allowable concentrations of contaminants, as regulated by SPDES permit, are considerably high considering the nature of the lake and geological features of the area. It is suspected that most of the SPDES discharge contaminants might have been getting entrapped in the lake and possibly leaching into the groundwater. Surface water and sediment samples from the McKay Lake will be taken and analyzed for the contaminants.

Required Detection Limits:

- a. The expected detection level for each parameter shall be specified by the permittee in the work plan.
- b. For the parameters which are included in the Table E-1, the detection levels must be no greater than 1/5 of the corresponding health-based criteria or action level. For those parameters which are both carcinogens and systemic toxicants, the detection level shall be based upon the lower of the two.

All soil and ground water sampling would be performed in accordance with current version of NYSDEC Quality Assurance Project plan (QAPjP) guidance and the sample analysis will follow the protocols established in the most current SW-846, Test methods for evaluating solid waste.

SAMPLING PLAN SUMMARY
GRUMMAN, CALVERTON

SWMU		INDEX NO.	SAMPLE/ MATRIX TYPE	NUMBER OF SAMPLES	COLLECTION PROCEDURE	CONSTITUENTS PARAMETERS FOR EACH MATRIX TYPE	ANALYTICAL METHOD
CLASS.	NAME						
Landfill	i. Northeast Pond Disposal Area	1	Soil	6 (4)	Grab	Volatiles	8240/8020
	ii. Picnic Ground Disposal area()	1	Sub Surface Soil [Every 2' up to 6']	18 (12)	Grab	Semi-Volatiles Pesticides- PCB's Lead Cadmium Chromium	8250 8080 7421 6010 6010
			Groundwater	6 (3)	Grab		
AREA OF CONCERN		INDEX NO.	SAMPLE/ MATRIX TYPE	NUMBER OF SAMPLES	COLLECTION PARAMETERS	CONSTITUENTS PARAMETERS FOR EACH MATRIX TYPE	ANALYTICAL METHOD
CLASS.	NAME						
Recharge Basin	McKay Lake	2	Surface Water	4	Grab	Chromium Lead	6010 7421
			Sediments	4	Grab	Cadmium	6010

SWMU		INDEX NO.	SAMPLE/ MATRIX TYPE	NUMBER OF SAMPLES	COLLECTION PARAMETERS	CONSTITUENTS PARAMETERS	ANALYTICAL METHOD
CLASS.	NAME						
Landfill	Northeast Pond Disposal Area	1	* Soil	6	Grab	BTX RCRA Metals	8240 6010 except 7421 for lead
			* Subsoil [Every 2' up to 6']	6	Grab		
			* Groundwater	6	Grab	BTX RCRA Metals	8240 6010 except 7421 for lead
Recharge Basin	McKay Lake	15	Surface Water Sediments	4	Grab	Chromium Lead Cadmium	6010 Sediments Surface Water 6010 except lead use 7421
				4	Grab		

APPENDIX 3
TO
THE RFA REPORT

6.0 WASTE TYPES AND QUANTITIES - SITE 1 - NORTHEAST POND DISPOSAL AREA

6.1 Site History/Description

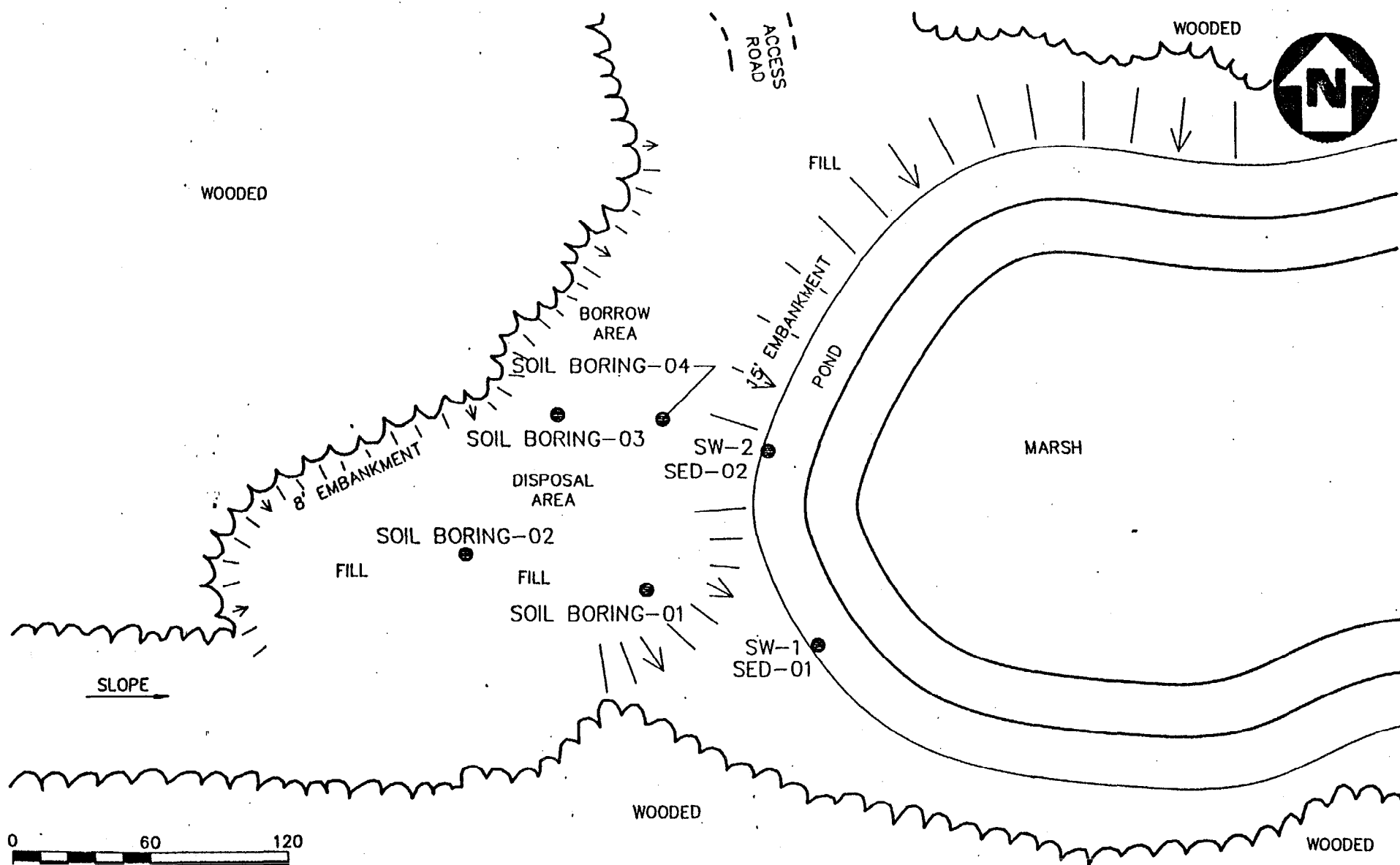
Until 1984, the northeast pond disposal area was used primarily for the disposal of demolition debris such as concrete, brick, wood, and other construction materials. A final soil cover was placed over the disposed material in 1984. According to available information, other materials in the fill include aircraft sections and junked aircraft assembly tooling, office materials and furniture, pallets, and paint cans. The wreckage of several aircraft may be present in the area. Hazardous materials are not known to have been purposefully disposed of in the area. However, it is reported in the 1986 Initial Assessment Study (IAS) that any of the following wastes may be present at the sites: petroleum, oils and lubricants (POLs), asphalt paving material, halogenated and nonhalogenated solvents, and paint sludges (Navy, 1986).

The waste materials were placed in a depression adjacent to the pond, and may have been used to fill portions of the pond. Soil borrowed from an adjacent hillside was used as cover material, creating a level area approximately 2 acres in size, with steep embankments up to 20 feet in height leading into the pond from the eastern edge of the disposal area (Navy, 1986).

No exposed wastes were observed on the surface or eastern embankment of the fill area during the site inspection. A small amount of debris, such as concrete chunks, wood scraps, and metal pieces, was exposed on the embankment leading into the woods from the south edge of the fill area. According to the IAS, approximately 7,500 cubic yards of material may have been disposed in this area.

6.2 Field Activities

Sampling activities at the northeast pond disposal area consisted of collecting 12 soil samples at 4 soil boring locations; 2 sediment samples; and 2 surface water samples. See Figure 6-1 for the location of each of the sample points at the northeast pond disposal area. Each of the samples was analyzed for volatile organics, semivolatile organics, metals, and cyanide. Additionally, the surface water samples were analyzed for polychlorinated biphenyls (PCBs) and pesticides.



SAMPLE LOCATION
SITE 1 - NORTHEAST POND DISPOSAL AREA
SITE INVESTIGATION
NWRP, CALVERTON, NEW YORK

FIGURE 6-1



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Relevant field observations are as follows.

- A black silty-clay material was discovered in Soil Borings 01 through 04. A black cinder-like material was identified in Soil Borings 01 and 04.
- A blue granular material was observed in the split spoon collected from 15 to 17 feet in Soil Boring 1 (Soil-01B). This sample represents the soils at the soil/groundwater interface. Also, an HNU reading of 20 ppm over the background reading was obtained from the headspace of a sample jar collected at this location.
- No visible contamination was observed in the surface water aqueous and sediment samples collected from the pond.
- Groundwater was encountered at a depth of 15 to 17 feet in Soil Borings 01 and 04, which are located closest to the pond. Groundwater was encountered at 20 to 22 feet in Soil Borings 02 and 03.

6.3 Analytical Results

6.3.1 Soil Results

The four soil borings in this area confirmed the depth of fill. Fill material was found in Soil Boring 01 from near the surface to near the water table at a depth of about 16 feet. Fill material was also found in Soil Boring 04 starting at a depth of about 1 foot. At a depth of 5 feet, there was no fill material observed. Observation of the soils in the other two soil borings at this site did not indicate the presence of fill material. Items discovered in the soil cuttings included wood, metal and fiberglass scraps, a black clay-like substance, a black cinder-like substance, and small amounts of a blue granular material (in Soil-01B).

The contaminants found in the soils at the northeast pond disposal area and their concentrations are summarized in Table 6-1 and individual sample results are presented in Table 6-2.

The results of chemical testing of the soiling boring samples indicated limited volatile organic contamination at this site. Elevated concentrations of semivolatile organic compounds and tentatively identified compounds (TICs) were identified in several of the soil borings, particularly Soil Boring 01.

TABLE 6-1

RESULTS OF ANALYSIS - SOILS SUMMARY
 SITE 1 - NORTHEAST POND DISPOSAL AREA
 SITE INVESTIGATION
 NWIRP CALVERTON, NEW YORK

PARAMETERS	CONCENTRATION RANGE			
	CRQL/CRDL	DEPTH 0 TO 2 FEET	DEPTH 5 TO 7 FEET	SOIL/ GROUNDWATER INTERFACE
1,2-Dichloroethane (ug/kg)	5	ND to 8J	ND	ND
Toluene (ug/kg)	5	ND to 3J	ND	ND
Ethylbenzene (ug/kg)	5	ND to 2J	ND	ND
Naphthalene (ug/kg)	330	ND	ND	ND to 1,700J
Total PAHs (ug/kg)	330	ND to 760J	ND	ND to 182500J
Total phthalates (ug/kg)	330	ND to 1,000	ND TO 450	ND
Aluminum (mg/kg)	40	BB	BB	BB to 22,400
Arsenic (mg/kg)	2	BB to 31.7	BB to 15.5	BB
Barium (mg/kg)	40	BB to 98.9J	BB to 290J	BB to 3,320J
Cadmium (mg/kg)	1	ND to 4.9	ND to 18.1	ND to 42.4
Chromium (mg/kg)	2	27.7 to 959	BB to 129	BB
Copper (mg/kg)	5	11.4J to 149J	BB to 184J	BB to 1,320J
Iron (mg/kg)	20	BB	BB to 15,100	BB
Lead (mg/kg)	0.6	BB to 42.5J	BB to 68.9J	BB to 314J
Manganese (mg/kg)	3	BB	BB to 482	BB
Mercury (mg/kg)	0.1	BB to 0.51	BB to 0.88	BB
Nickel (mg/kg)	8	BB to 14.7	BB to 118	BB to 233
Silver (mg/kg)	2	ND to 2.3J	ND to 4.9J	ND to 115J

PARAMETERS	CONCENTRATION RANGE			
	CRQL/CRDL	DEPTH 0 TO 2 FEET	DEPTH 5 TO 7 FEET	SOIL/ GROUNDWATER INTERFACE
Vanadium (mg/kg)	10	ND	BB to 39.2J	BB to 85.2J
Zinc (mg/kg)	4	28.1J to 139J	BB to 385J	BB to 2,380J
Cyanide (mg/kg)	2	ND to 5.5	ND to 4.4	ND to 5.7

J - Estimated.

ND - None detected.

BB - Below background (See Table 5-1).

CRQL/CRDL-Contract Required Quantitation Limit/Detection Limit.

PAHs = Polynuclear aromatic hydrocarbons: benzo[a]pyrene, dibenzofuran, naphthalene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene, benz[a]anthracene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, chrysene, pyrene, fluoranthene, anthracene, phenanthrene, fluorene, acenaphthene, acenaphthylene, and 2-methylnaphthalene.

TABLE 6-2

RESULTS OF ANALYSIS - SOILS
 SITE 1 - NORTHEAST POND DISPOSAL AREA
 SITE INVESTIGATION
 NWIRP CALVERTON, NEW YORK

PARAMETER	CRQL/ CRDL	SOIL 01	SOIL 01A	SOIL 01B	SOIL 02	SOIL 02A	SOIL 02B	SOIL 03	SOIL 03C	SOIL 03A	SOIL 03B	SOIL 04	SOIL 04C	SOIL 04A	SOIL 04B
1,2 - Dichloroethane (ug/kg)	5							4J	8J				1J		
Toluene (ug/kg)	5								3J				1J		
Ethylbenzene (ug/kg)	5								2J						
Naphthalene (ug/kg)	330			1700J											
Dibenzofuran	330			1600J											
Total PAHs (ug/kg)	330	760J		182500 J	149J			558J	455J						
Total TIC PAHs (ug/kg)				30,540											
Total Phthalates (ug/kg)	330				570	450		1,000	64J			35J			
Total TIC PCBs (ug/kg)		NA	NA	NA	140	NA	NA	240	NA	NA	NA	NA	NA	NA	NA
Aluminum (mg/kg)	40			22,400											
Arsenic (mg/kg)	2				31.7	15.5			5.5						
Barium (mg/kg)	40	48.3J	128J	3320J		290J		56.5J	98.9J						
Cadmium (mg/kg)	1	4.9	5.5	42.4	1.3	18.1	1.2	2.1	2.6			1.1			
Chromium (mg/kg)	2	959	23.8	73.1	159	129		31.3	30.9			36	27.7		

PARAMETER	CRQL/ CRDL	SOIL 01	SOIL 01A	SOIL 01B	SOIL 02	SOIL 02A	SOIL 02B	SOIL 03	SOIL 03C	SOIL 03A	SOIL 03B	SOIL 04	SOIL 04C	SOIL 04A	SOIL 04B
Copper (mg/kg)	5	149J	153J	1,320J	26.3J	184J		104J	46.3J			11.4J	12.4J		
Iron (mg/kg)	20					15,100									
Lead (mg/kg)	0.6	42.5J	68.9J	314J	33.9J	62.4J		19.9J	30J						
Manganese (mg/kg)	3					482									
Mercury (mg/kg)	0.1	0.51	0.88			0.17									
Nickel (mg/kg)	8	14.7	35.9	233		118			9.9						
Silver (mg/kg)	2		4.9J	115J		2.2J		2.3J							
Vanadium (mg/kg)	10			85.2J		39.2J									
Zinc (mg/kg)	4	118J	206J	2,830J	81.5J	385J		139J	123J						
Cyanide (mg/kg)	2	5.5		5.7	4.1	4.4									

(1) A blank indicates that the sample was analyzed, but not detected above background concentrations.

TIC = Tentitively identified compounds.

PAH = Polynuclear aromatic hydrocarbons.

J = Estimated.

CRQL/CRDL - Contract Required Quantitation Limit/Detection Limit.

Soil Boring 01 also had the most notable concentrations of inorganic contaminants and semivolatile organic TICs. The soil/groundwater interface sample, Soil-01B, was measured to contain a total TIC PAHs concentration of about 30,540 ug/kg. TICs by their nature are generally unknown with little or no data available as to the relative toxicity of the individual compounds. As a result, minimal conclusions can be derived from these results.

6.3.2 Surface Water Results

The results of the chemical analysis of the surface water samples collected from the pond at the toe of the fill area did not indicate the presence of organic contamination. However, elevated levels of several inorganic contaminants were present in the samples. No significant TICs were identified. Table 6-3 lists the significant compounds and concentrations. For comparison, the Federal Ambient Water Quality Criteria Standards are presented.

6.3.3 Sediments Results

Table 6-4 presents the contaminants found in the sediments collected at the site. The analysis of the sediment sampled indicated only limited elevated concentrations of volatile organic and inorganic compounds. TICs by their nature are generally unknown with little or no data available as to the relative toxicity of the individual compounds. As a result, minimal conclusions can be derived from these results.

6.4 Conclusions and Recommendations

Contaminated fill material was found at Site 1. The primary contaminants detected in the fill and adjacent soils were inorganics, although a limited concentrations of volatile organics were also found. The waste materials extend from near the surface down and into the groundwater table. Contamination of the groundwater in this area is a possibility.

Similarly, contamination of the sediments and surface water adjacent to Site 1 was found. This contamination does not appear to be as significant as the soil contamination. However, this contamination is an indication that contaminants may be migrating from the site.

Additional investigation is needed at this site to characterize the nature and extent of contaminated fill and soils as well to evaluate the effect this contamination has on the underlying groundwater and adjacent surface water and sediments beyond those areas sampled.

TABLE 6-3

SURFACE WATER CONTAMINANTS AND CRITERIA (ug/l)
 SITE 1 - NORTHEAST POND DISPOSAL AREA
 SITE INVESTIGATION
 NWIRP CALVERTON, NEW YORK

PARAMETER	CRDL	SW 01	SW 02	SW 02A	FEDERAL AWQC
Aluminum	200	1,350	90.3	115	87
Chromium	10	63.3			11 (Hex) 210 + (+3)
Copper	25	14.9			12+
Iron	100	3,870			1,000
Lead	5	8.1	4.4	4	3.2+
Zinc	20	221J			110+
Cyanide	10	83.4J		12.5J	5.2

- (1) A blank indicates that the sample was analyzed, but that the result was below the water quality criteria.
 (2) Sample SW 02A is a duplicate sample of sample SW 02.

AWQC = Chronic Freshwater Ambient Water Quality Criteria (EPA 1976, 1980a, 1987b, 1988b)

Hex = Hexavalent

(+3) = Trivalent chromium

+ = Hardness-dependent criterion; assumed 100 mg/l.

CRDL = Contract Required Detection Limit

TABLE 6-4

RESULTS OF ANALYSIS - SEDIMENTS
SITE 1 - NORTHEAST POND DISPOSAL AREA
SITE INVESTIGATION
NWIRP CALVERTON, NEW YORK

PARAMETER	CRQL/ CRDL	SED 01	SED 02
1,2 - Dichloroethane (ug/kg)	5	2	2
Total TIC Phthalates (ug/kg)		240	
Chromium (mg/kg)	2	70.5	
Copper (mg/kg)	5	15.1	
Zinc (mg/kg)	4	58.9	

- (1) A blank indicates that the sample was analyzed but not detected above background.
TIC = Tentatively identified compounds.
PAH = Polynuclear aromatic hydrocarbons
CRQL/CRDL = Contract Required Quantitation Limit/Detection Limit

8.0 WASTE TYPES AND QUANTITIES - SITE 4 - PICNIC GROUNDS DISPOSAL AREA

8.1 Site History/Description

The picnic grounds disposal area was active before the construction of the Calverton facility. Aerial photographs taken in 1947 show the disposal area, along with several adjacent dwellings. The disposal area is approximately 40 x 60 feet in size, and was excavated to a depth of approximately 8 feet. The IAS reports that the following materials are known to have been placed in the disposal area: framing lumber, snow fencing, steel wall studs, steel stairways and ladders, tubular metal items, foam billets, furniture, and plywood, concrete, demolition material, and carpeting. No evidence of hazardous waste disposal exists.

The picnic grounds disposal area is located west of Runway 5-23, approximately 2,500 feet north of River Road and 6,500 feet west of the south gate (see Figure 1-3). The area is located on the western side of a "T" intersection of two dirt roads. One road is oriented south to north and ends at Rt. 25 approximately 3,000 feet north of the disposal area. The second road begins at the picnic grounds disposal area and trends east for approximately 500 feet to the ammunition demolition area. The road then turns to the north-northeast and enters the picnic area after extending approximately 1,500 feet (USGS, 1967).

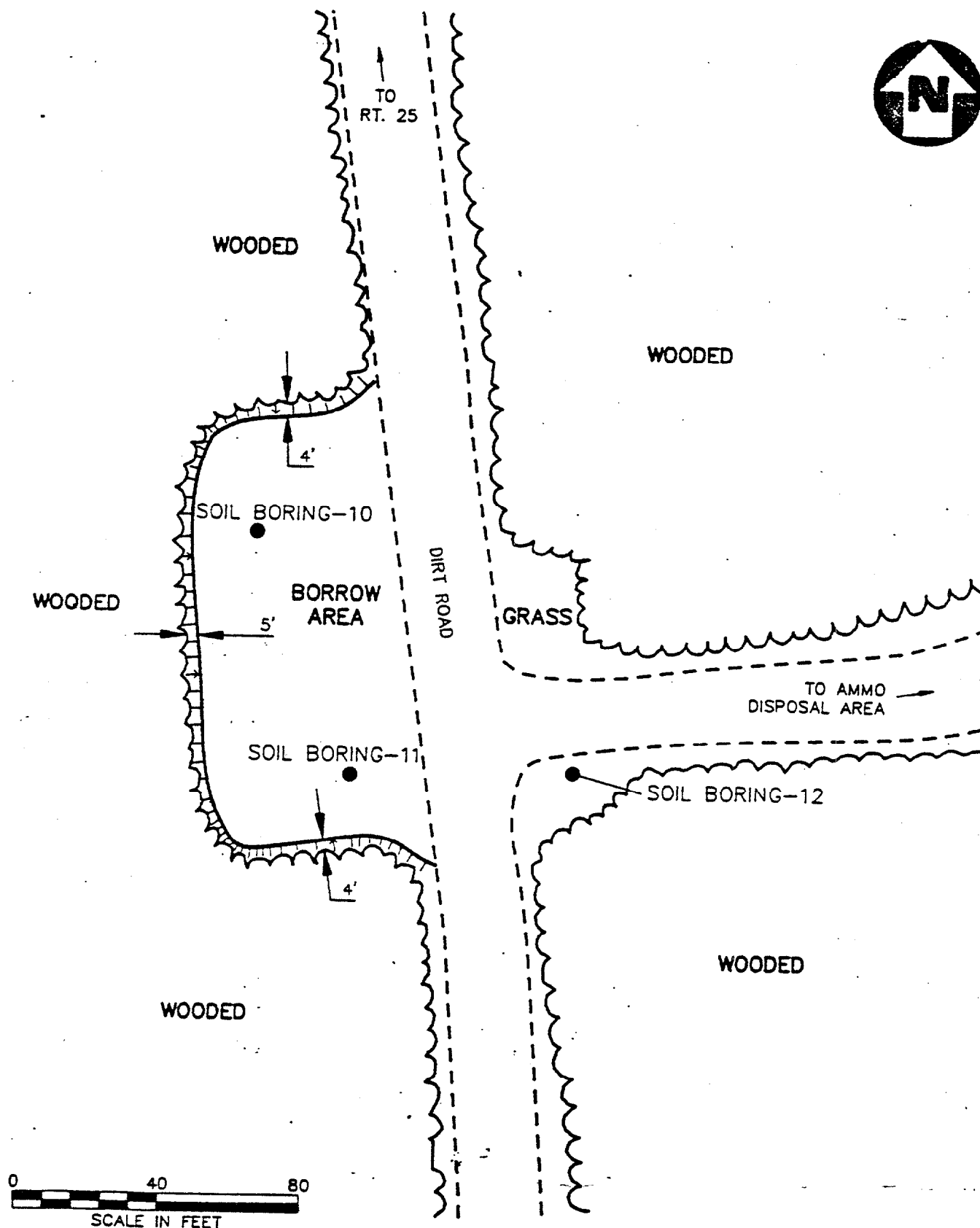
The disposal area is approximately 60 feet in length from north to south, and 40 feet in width, east to west. The area is level and is at the same elevation as the roadway. On its western edge, it is excavated a maximum of 4 feet into the underlying soils. The area is wooded on all sides. A small clearing exists on the eastern side of the intersection (USGS, 1967; Navy, 1986).

8.2 Field Activities

Sampling activities at the picnic grounds disposal area consisted of collecting nine soil samples at three soil boring locations. See Figure 8-1 for the location of each of the sample points at the picnic grounds disposal area. Each of the samples was analyzed for volatile organics, semivolatile organics, metals, cyanide, PCBs, and pesticides.

Relevant field observations are as follows.

- Wood, plywood and plastic scraps were observed in the soil cuttings obtained from Soil Boring 10. A split-spoon sample could not be obtained from the 5- to 7-foot depth because the spoon could not be advanced. Based on the behavior of the



SAMPLE LOCATION
SITE 4 - PICNIC GROUNDS
DISPOSAL AREA
SITE INVESTIGATION
NWIRP, CALVERTON, NEW YORK

FIGURE 8-1



HALLIBURTON NUS
Environmental Corporation

spoon, it is suspected that wooden debris may have been present at this depth.

- No significantly elevated HNU readings were recorded.
- Groundwater was encountered at depths of 15.5 feet, 15.75 feet, and 15.25 feet in Soil Borings 10, 11, and 12, respectively.

8.3 Analytical Results

The results of chemical analysis of the soil samples collected at the picnic grounds disposal area are presented in Table 8-1. These results did not reveal evidence of significant contamination by organic or inorganic compounds. The concentrations of contaminants detected were generally low, near background levels for inorganics or near the detection limits for organics. Levels of unknown semivolatile organic TICs ranged from approximately 8,150 to 23,240 ug/kg. TICs by their nature are generally unknown with little or no data available as to the relative toxicity of the individual compounds. As a result, minimal conclusions can be derived from these results.

8.4 Conclusions and Recommendations

The relatively low concentrations of organic and inorganic contaminants at the site as well as the observations of fill material in the area confirm that disposal activities have occurred at this location in the past. However, the number and concentration of contaminants detected were relatively low, indicating that significant quantities of hazardous materials are probably not present.

Based on the absence of significant contamination, no additional investigation in this area is recommended.

TABLE 8-1

RESULTS OF ANALYSIS - SOILS
SITE 4 - PICNIC GROUNDS DISPOSAL AREA
SITE INVESTIGATION
NWIRP CALVERTON, NEW YORK

PARAMETER	CRQL/ CRDL	SOIL 10	SOIL 10C	SOIL 10A	SOIL 10B	SOIL 11	SOIL 11A	SOIL 11B	SOIL 12	SOIL 12A	SOIL 12B
Methylene Chloride (ug/kg)	5		1J	2J							
Chloroform (ug/kg)	5					1J					
1,2 - Dichloroethane (ug/kg)	5			7	6						
Trichloroethene (ug/kg)	5			2J							
Toluene (ug/kg)	5			2J							
Total PAHs (ug/kg)	330	980J	124J	NA	197J				NA		
Total TIC Phthalates (ug/kg)			2,600	NA			940		NA		
Cadmium (mg/kg)	1	1.4J	1.6J	NA					NA		
Copper (mg/kg)	10	23.1J	27.2J	NA					NA		
Lead (mg/kg)	20	21.3J		NA					NA		
Silver (mg/kg)	1	2.4J		NA				1.2J	NA		
Zinc (mg/kg)	4		46.5J	NA					NA		
Cyanide (mg/kg)	2	4.7J		NA					NA		

(1) A blank indicates that the sample was analyzed but not detected above background.
TIC = Tentatively identified compounds.
PAH = Polynuclear aromatic hydrocarbons.
C = Duplicate result.
NA = Not analyzed.
J = Estimated
CRQL/CRDL = Contract Required Quantitation Limit/Detection Limit.